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**Feasibility of Outfitter and Hunting Guide Participation
in reporting Observations of Grizzly Bears
in registered Guiding Areas
of the Yukon Territory**

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SUMMARY

Presented are the results of an investigation into the feasibility of using observations of grizzly bears (Ursus arctos) by Yukon Territory outfitters and hunting guides, mainly as:

- a) a data source to evaluate existing estimates of grizzly bear densities and population trends;

and also,

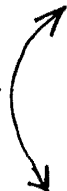
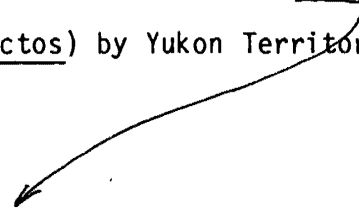
- b) to determine sex-specific differences in grizzly bear behaviour (~~and to communicate such differences to outfitters and hunting guides~~) in order to facilitate male-specific hunting;

- c) to create an awareness in outfitters and hunting guides of the rate of production of off-spring in grizzly bear populations per unit area and per adult female ~~by communicating the results from the program;~~

- d) to exchange information on all aspects of grizzly bear behaviour and distribution to upgrade the understanding of the species particularly by hunting guides.

in the collection of data
Scrutiny of biases inherent ~~to data collected in the program~~ resulted in the conclusion that the net effect of ~~direction and magnitude~~ of all potential biases combined, cannot be measured, ^{thereby} eliminating ^{the} ~~their~~ usefulness. ^{of the data.} At least three (but possibly more) of 16 outfitters contacted were firmly opposed to participation with the program. They believe that release of information

Could these not be combined?



about the wildlife resources of their registered guiding areas (RGA's) would result in encroachment by resident hunters, based on alleged past experiences with the YFWB. As RGA's also experience a high turnover in tenure, it was concluded that observational data of grizzly bears from outfitters and hunting guides are not effective in accomplishing the stated objectives. Alternate courses to meet these objectives are discussed.

1.0 INTRODUCTION


The grizzly bear (Ursus arctos) was once indigenous to most of western North America and occupied a wide range of habitats. Indiscriminate hunting by man and the species' inability to adapt to changes wrought by civilization has caused significant reductions in both numbers and range occupied by the species. Populations relatively unaffected by man now occur only in remote regions of western and northern Canada and in Alaska (Cowan 1972).

In the Yukon Territory grizzly bear densities are sufficiently high to allow a limited harvest (Pearson 1975; Sidorowicz & Gilbert 1981). However, the inherent incapability of grizzly bear populations to absorb significant human-caused mortality (Bunnell and Tait 1981) and the difficulties to accurately census bear populations (Knight and Eberhardt 1985) ^{ve} have made it an especially difficult animal to manage. The perpetuation of viable populations depends in a large measure on the close monitoring of grizzly bear populations and their harvests and the implementation of effective management prescriptions where and whenever the need arises (Pearson 1975). ∞

In the Yukon Territory population estimates obtained through intensive field studies are known from four areas: the Auriol Range in Kluane National Park (Pearson 1975), the Barn Range in the northern Yukon Territory (Nagy, Russell, Pearson, Kingsley and Goski 1983), the Ogilvie Mountains in west central Yukon Territory (Smith, in prep.), and the Coast Mountains in southwestern Yukon (Larsen, in prep.). In addition intensive population studies have been or are being carried out in nine interior areas of Alaska and the Northwest Territories. (references ...)

The extent to which these estimates can be extrapolated to other areas of the territory is uncertain. Expansion of intensive field studies into areas representative of the remainder of the Yukon Territory is hampered by the very high costs associated with such studies.

Shifts in funding priorities to moose (Alces alces) and woodland caribou (Rangifer tarandus caribou) inventory, and ^{ungulate} population enhancement in the next five years will likely constrain moneys available for further grizzly bear population studies (Pelchat, pers. comm.). As a result, grizzly bear management may have to rely increasingly on existing population data and a critical examination of harvest data. Additional information relative to the distribution and densities of territory-wide grizzly bear populations are thought to be obtainable from observations by the public (Pelchat, pers. comm).

The use of observations of unmarked grizzly bears and their sign has been used to estimate population distribution and/or size in Glacier National Park, U.S.A. (Martinka¹⁹⁷⁴), in Yellowstone National Park, U.S.A. (McCullough, pers.  comm.), in the U.S.S.R. (Pelchat, pers. comm.) and in Yukon Territory (Sidorowicz and Gilbert 1981; Smith, unpubl). McCullough (pers. comm.) has proposed to use the results of the system as a tool for management decisions.

In contrast with studies of marked bears (Jonkel and Cowan 1971; Mundy and Flook 1973) observational data of unmarked bears are of limited ~~information~~ value as only certain classes (i.e. reproductive females with cubs of the year, reproductive females with older young, single bears) can be identified with confidence (see Martinka 1974). It can be expected that attempts to

individually identify single grizzly bears are subject to a great degree of bias. Martinka (1974) presents the only well documented study involving observations of unmarked grizzly bears as a means of assessing population density. He concludes that observational techniques are of limited potential for accurate density estimates but that results are useful for comparative purposes. In his study observations were carried out from an extensive trail system and by observers thought to be qualified.

In Yukon Territory segments of grizzly bear range are traversed yearly by hunting parties outfitted by tenants (hereinafter called outfitters) of registered guiding areas (RGA's) who have exclusive right to guide non-resident (e.g. persons not residing in Yukon Territory) hunters. The fact that outfitters use these extensive areas from year to year makes them, as a group, more suitable as informants of the status of the wildlife resources in these areas than other user groups. Additionally, outfitters have often expressed the desire to be consulted in YFWB management decisions regarding the wildlife resources in their RGA's.

During a grizzly bear population study in the Ogilvie Mountains, west central Yukon Territory, analysis of observational data collected by project staff and outfitter/hunting guides suggested that observations reported by outfitters ^{and hunting guides} are a usable data source.

Consultation with Yukon Territory outfitters during spring 1985 indicated a willingness* to cooperate with a program whereby they and their guide-

*At individual meetings in late spring 18 of 20 outfitters said they were interested in cooperating in the program.

employees would share grizzly bear observations with the Yukon Fish and Wildlife Branch (YFWB). The program was subsequently started ⁱⁿ with the fall of ^{the} 1985 hunting season.

The main objective of the program is:

a) to determine the feasibility of using grizzly bear sightings by Yukon Territory outfitters and hunting guides as a data source to evaluate ~~existing estimates of~~ grizzly bear density and population trends.

Several other objectives that would serve the general grizzly bear management program of the YFWB were included. These are:

b) to determine sex-specific differences in grizzly bear behaviour ~~and to communicate such differences to outfitters and hunting guides~~ in order to facilitate male-specific hunting.

c) to create an awareness in outfitters and hunting guides of the rate of production of off-spring in grizzly bear populations per unit area and per adult female ~~by communicating the results from the program.~~

d) to exchange information on all aspects of grizzly bear behaviour and distribution to upgrade the understanding of the species particularly by hunting guides.

Since the completion of the fall 1985 hunting season, the quality of the data and level of cooperation from outfitters/guides has been evaluated and discussions have been held with outfitters. It was found that many potential

problems undermined the viability of the program ^{necessitating} and a reevaluationⁿ of the program's feasibility, ~~seemed appropriate.~~ ^{of the program.}

The present report contains a review of the results of the program to date and identifies problems encountered as well as potential problem areas inherent ~~to the observer group involved, in order to evaluate the program's feasibility.~~
in the program.

2.0 ACKNOWLEDGEMENTS

A number of persons participated in discussions about the program. They are outfitters K. Heynen, P. Jensen, R. Furniss, R. Dalziel, D. Marino, C. Martin, W. Koser, R. Dickson, J. Ostashek, R. Hardie, C. Martin, D. Young, R. Hassard, D. Smarch, T. Wilkinson, and biologist N. Barichello.

3.0 METHODS

3.1 Data Collection

Before the summer/fall 1985 hunting season, waterproof notebooks and pencils were given to guides and outfitters along with an informative letter describing the program and the recording requirements of ^{grizzly bear observations.} ~~the sightings~~. An example of data required was provided in this letter. It was hoped that the liberal format arising from these instructions would generate ^{suggestions} ~~clues~~ for the development of a more detailed recording form. During December outfitters were asked to submit their, and their guides', notebooks and meetings were arranged to discuss the data collected. Additional information of the sightings was acquired during these meetings in an attempt to standardize the data and complete the data requirements. ~~Ideally,~~ ^{The} following information was ^{requested:} ~~collected:~~ date, time and location of sightings; size, colour, sex (guessed), group size of bears; ^{habitat unit and its aspect and altitude} ~~aspect, altitude, habitat unit~~, distance of sighting; whether bear was hunted, wounded or killed. Outfitters' attitudes towards the program were investigated through these meetings or telephone interviews.

3.2 Potential Analyses

The following schedule lists the potential analyses available from a grizzly bear observations recording system together with its inherent potential biases* and potential techniques to reduce these biases. The very nature of the outfitting industry may potentially be responsible for a number of observer-specific biases in addition to those to be expected from a multi-observer recording system. Grizzly bear sightings can be expected to be in one or more of three inherent (probable) effects on the data quality, according to the following schedule:

<u>Sighting class</u>	<u>Probable effects on data quality</u>
1. Sightings sincerely and accurately recorded.	Such data would potentially reveal information about the topics mentioned below.
2. Sightings sincerely, but inaccurately recorded.	When inaccuracies show no particular direction, the averages of the statistics to be calculated may not be affected significantly. However, under conditions of numerous and gross inaccuracies, the potential for significant biases is great.
3. Sightings deliberately misreported owing to vested interests.	
I. Vested interests of outfitters may stem from the following beliefs:	
a) that hunting opportunities may be restricted when analysis of grizzly bear sightings by YFWB suggests that the grizzly bear population cannot sustain current harvest levels.	a) Such data may show more bears and higher levels of female reproductivity.
b) that information release about	b) Grizzly bear sightings may be reported to have occurred in areas where the

Categories each with its

*Biases reported here do not necessarily constitute all potential biases.

the grizzly bear resource in the RGA's may cause an influx by resident hunters.

outfitters object least to the presence of resident hunters. Outfitters may also report fewer sightings than actually occurred as analysis of information of actual sightings may be construed to indicate that their RGA's are good bear hunting areas.

- c) that the YFWB may perform intensive grizzly bear population studies when analysis of sighting data suggests that such action is required.

- c) Such data may be biased towards any direction that the outfitters perceives to be more characteristic of "normal" conditions.

II. Hunting guides may

- d) be of the opinion that the interests of their outfitter/employer are theirs and/or they ~~stampa-~~ thize with him/her;

- d) Such data are potentially subject to the biases mentioned under a, b and c.

- e) be in conflict with their outfitter/employer and want to use the grizzly bear sighting program to damage their interests;

- e) Such data are potentially subject to biases opposite to those mentioned under a, b and c.

- f) be in conflict with their client or have other reasons not to be interested in hunting grizzly bears.

- f) Such data may show a bias towards fewer bears than actually seen and higher proportions of bear family groups than actually encountered.

3.2.1 Relative population abundance

3.2.1.1 Methodology

An index of relative population abundance can be developed from plotting identifiable sightings of family groups* onto a topographical map of delineated hunted areas and calculating minimum number of individual females per unit area. Another possible index of abundance can be derived from a comparison of sighting frequencies per GMS** with numbers of days hunted per GMS** (as calculated from OTE** data) and calculating number of sightings per day hunted.

*Fidelity of female grizzly bears to relatively small home ranges assures that analyses of sightings of females may provide a more expedient tool of total bear estimates, relative to sightings of all groups. Family groups are also more likely to be identified correctly, relative to single bears.

**GMS: Game Management Subzone
OTE: Outfitter Trophy Export Declaration Form.

3.2.1.2 Potential biases

- a) Certain areas may only be visited during times of the year when for behavioural reasons, or reasons of obscuration by vegetation, bears may be less (or more) observable.
- b) Colour description inconsistencies may occur between guides, or bleaching of pelages of bears (Pearson 1975) may complicate re-identification. Mortality within litters prevents identification of females by the numbers of their off-spring.
- c) Sighting records may be incomplete.
- d) OTE forms may be filled out falsely (K. Heynen, pers. comm.).
- e) Variation between seasons in the proportion of sightings recorded accurately and sincerely, per RGA.

3.2.1.3 Potential techniques to reduce biases

- a) Density indices may be calculated per month.
- b) Colour descriptions may be standardized; identification of family groups should be facilitated by using several identifiers (i.e. colour and relative size of all group members); data may be analyzed with known information on grizzly bear home ranges in mind.
- c) The format of the notebooks can be designed to make recording more practical.
- d) Questionnaires to hunters may possibly illuminate problem areas.
- e) Questionnaires to hunters may possibly illuminate problem areas.

3.2.2 Absolute population abundance

How?

3.2.2.1 Methodology

3.2.2.2 Potential biases

3.2.2.3 Potential techniques to reduce biases

The methods mentioned under 3.2.1.1 can also be used for estimating absolute population abundance in frequently hunted areas.

Same as 3.2.1.2.

Same as 3.2.1.3.

3.2.3 Distribution and home range size

3.2.3.1 Methodology

3.2.3.2 Potential biases

3.2.3.3 Potential techniques to reduce biases

All sightings plotted on topographical maps provide an indication of grizzly bear distribution. From all identifiable sightings minimum home range areas can be computed.

Same as 3.2.1.2 a, b, c and e.

Same as 3.2.1.3 a, b, c, and e.

How?

3.2.4. Diurnal and seasonal habitat use

3.2.4.1 Methodology

3.2.4.2 Potential biases

3.2.4.3 Potential techniques to reduce biases

The distribution of bears (i.e. single bears, groups of bears) over the various habitat units can be computed on a diurnal and seasonal basis. The method is mainly to be used as an indicator of the relative usage by the different bear groups of each habitat unit. The method is not useful as an indicator of seasonal habitat use (for most habitat units) by the bear population due to observability differences between vegetation types and seasons.

a) The observability between bear groups may not be equal.

a) A comparison made with studies where habitat use and observability have been documented for the different groups may result in the derivation of useful correction factors.

b) Inaccurate or false reporting practices may introduce a bias (see 4.2).

b) Questionnaires to hunters may illuminate problem areas.

3.2.5 Relative observability

3.2.5.1 Methodology

The distribution of the sightings of single bears in groups may be computed.

3.2.6. Productivity per unit area

3.2.6.1 Methodology

The number of cubs, yearlings and two-year olds in identifiable family units can be determined, and hence an index of productivity per unit area may be derived.

3.2.5.2 Potential biases

Inaccurate or false reporting practices may introduce a bias (see 4.2).

3.2.6.2 Potential biases

- a) Sibling year classes may be improperly identified.
- b) Observations from a distance may underestimate sizes of litters.
- c) Data may be too inaccurate to arrive at an acceptable estimate.
- d) Summer mortality within litters, prevents separation of females by the numbers of their off-spring.
- e) Inaccurate or false recording practices may introduce a bias (see 4.2).

3.2.6.3 Potential techniques to reduce biases

Questionnaires to hunters may illuminate problem areas.

3.2.6.3 Potential techniques to reduce biases

- a) Determine how individual guides evaluate off-spring ages. Possibly a system that corrects for this can be developed.
- b) A correlation between distance of sighting and observed litter size may be ascertainable and a correction factor can possibly be deduced.
- c) Data may possibly be improved by improving guide/outfitter instructions.
- d) Identification of family groups should be facilitated by using several identifiers (i.e. colour and relative size of all group members).
- e) Questionnaires to hunters may illuminate problem areas.

4.0 RESULTS

4.1 Data Quality - 1985

4.1 1 Outfitter and Guide Cooperation

During the closed Yukon Outfitters Association meeting in fall 1985, the outfitters present agreed with a motion by member R. Hardie to return the sighting notebooks blank (K. Heynen, pers. comm.). At the outfitters/YFWB meeting of November 15, 1985 the outfitters present agreed to cooperate in providing certain information about the sightings. Several members remained reluctant to provide detailed geographical information about the sightings (K. Heynen, pers. comm.).

By January 6, most outfitters had been contacted regarding the submission of grizzly bear sighting data collected in their RGA's (Table 1). Six of them had sighting data submitted by that date. Many others informed us they would provide us with their records at a later date. Most of these had not been successful in collecting their guides' sighting notebooks but promised to try again. Three outfitters refused to cooperate with the program. Their arguments centered around two areas of concern (R. Hardie, K. Heynen, D. Young, pers. comm.) (see Appendix II for summaries of the discussions with outfitters).

- a) Release of information on bear sightings would reveal locations of their main mountain sheep hunting areas (bear sightings often take place while hunting mountain sheep), which was expected to result in an influx of resident mountain sheep hunters in these areas (based on alleged previous experiences with YFWB studies), and;

TABLE 1 Responses in submissions of records of grizzly bear observations by Yukon Territory Outfitters, as of January 6, 1986

Outfitters engaged in program	Registered guiding area No.	Records* submitted by Jan. 6	Refused to cooperate	Promised to meet with us at a later date	Data too poor	Unable to reach
S. Reynolds	1					+
D. Low	2					+
P. Jensen	3				+	
R. Furniss	4			+		
R. Dalziel	5	+				
D. Marino	6	+				
C. Drinnan	7					+
D. Coleman	8	+++		+		
W. Koser	9			+		
R. Dickson	10			+		
J. Ostashek	11			+		
J. Drift	12					+
R. Hardie	13		+			
B. Desrosiers	14			+		
C. Martin	15	+				
D. Young	16		+			
K. Heynen	17		++++			
B. Hassard	19			+		
D. Smarch	20			+		
T. Wilkinson	22	+				

* 1985 observations unless stated otherwise.

** 1984 observations.

*** Refused to be specific about observations.

- b) Release of information on bear concentrations might increase bear hunting by residents in such areas (through the same alleged mechanisms mentioned under a).

Two outfitters suggested that the number of outfitters reluctant to provide good data was substantial (R. Hardie, K. Heynen, pers. comm.).

The collection of sighting notebooks from the guides upon completion of the hunting season posed a problem for some outfitters. Many guides did not record sightings consistently, or at all (R. Dalziel, R. Furniss, P. Jensen, D. Marino, D. Smarch, pers. comm.). Some outfitters felt it was the YFWB's responsibility to collect notebooks.

Motivation in reporting sightings varied between individual guides and outfitters. For example, R. Dalziel claimed that his guides often do not mention bear sightings to hunters in order to prevent having to hunt the bears involved. Such bears would not usually be recorded (R. Dalziel, pers. comm.). P. Jensen seemed reluctant to improve the limited information of observations recorded by his guides. D. Marino, who firmly believes his RGA supports a higher grizzly bear density than the YFWB has estimated, was keen on reporting bear sightings and encourages his guides to record sightings (D. Marino, pers. comm.).

4.1.2 Sighting Records Submitted per Registered Guiding Area

By January 6, six outfitters had submitted sighting data. Although the program was initiated before the fall 1985 hunting season, some 1984 data were also provided by two of the participants. In total, 93 sightings of five different

RGA's were reported, 71 of which constituted single bears and 22 groups of more than one bear (Table 2).

TABLE 2 Numbers and group sizes of grizzly bear observations reported by Yukon Territory outfitters (and their employees/clients), 1984 - 1985

Outfitter	Season (summer/fall)	Total number of sightings reported	Groups size		Meeting arranged to discuss results
			1	>1	
D. Low	1985	8	6	2	-
T. Wilkinson	1984	11	10	1	+
T. Wilkinson	1985	14	12	2	+
D. Coleman	1984	26	19	7	-
R. Dalziel	1985	6	5	1	+
D. Marino	1985	11*	6	5	+
C. Martin	1985	17	13	4	+
T o t a l		93	71	22	

*Small portion of all observations recorded. More observations expected to be provided at a later date.

4.1.3 Information Recorded

Information recorded included date and location of sighting, number, sex, colour and size of bears, and group size. However, few sighting records displayed information on all of these aspects. Most of the required information was obtained through meetings with participating outfitters, particularly since most reported sightings were recorded by those outfitters themselves, rather than their guides.

A notable amount of variation in the degree of details recorded between reported sightings was apparent. This lack of consistency is probably due to a number of factors including differences in experience and recording practices between guides and outfitters, levels of observability of bears and the absence of clear instructions about recording requirements.

5.0 DISCUSSION

5.1 Improving Outfitter and Guide Cooperation

It can reasonably be assumed that the guides' efforts to report sightings are a function of those of their outfitter employers. The crux of the problems in cooperation lies therefore with the outfitters. The three outfitters that openly refused to cooperate with the program may represent only a portion of all outfitters opposed to the program. It is possible that some outfitters who postponed their meetings with us to discuss their data were in fact reluctant to cooperate with the program*. K. Heynen's suggestion that most outfitters were opposed to the program would support such a possibility.

Outfitters that were opposed were united in their belief that release of information about the bears in their RGA would result in more hunting activity by residents. Such fears must be viewed in the context of the current bear management system for non-resident hunters, where increases in the resident/control harvests may lead directly to a decrease in the allowable

*And, of course, amongst outfitters we were unable to reach, some may be opposed to cooperation with the program as well.

harvest by non-resident hunters; and the stakes are high (T. Wilkinson, pers. comm.) with grizzly bears valued up to \$10,000**.

If reluctance to cooperate is as widespread as K. Heynen and R. Hardie suggest, and as strongly a function of the fear that an increase of information release will result in an increase of encroachment of the RGA's by resident hunters, it seems unlikely that much cooperation can be expected in the future regarding a recording system of grizzly bear sightings. In fact, it can reasonably be expected that outfitters will guard the knowledge about their RGA's wildlife resources more jealously as the trend of increased hunting efforts into Yukon's hinterlands by residents (pers. observ.) continues. L

5.2 Improving data quality

The data are characterized by a large number of potential biases which can be classified as follows:

a) biases arising from the species and habitat characteristics (i.e. biases stemming from differences in observability between bear groups, areas and seasons; biases in identification of individual bears resulting from bleaching of pelages and/or mortality within litters);

**This figure refers to spring bear hunts when the opportunity to hunt grizzly bear is usually the only reason for booking the hunt. During the summer/fall hunting season bears are, in most cases, hunted in conjunction with other animals and the value of a grizzly bear is then usually lower but difficult to assess. ↗

- b) biases arising from multi-observer characteristics (i.e. biases in identification of individual bears (bear groups) stemming from differences in identification criteria between observers; biases in various areas resulting from differences in accuracy of recording practices);

- c) biases arising from vested interests to report observations falsely (i.e. OTE forms may be filled out falsely; observations may be reported falsely).

Biases from category a) may be somewhat qualifiable and quantifiable from known grizzly bear behaviour and habitat characteristics. Some biases arising from a multi-observer system may be reduced (i.e. colour description inconsistencies between guides, incomplete sighting records, improperly identified sibling year classes), however, some will no doubt always remain and it seems unlikely that their extent can be determined (i.e. proportion of accurate records and of positively identifiable sightings). Those biases arising from a multi-observer system and from vested interest in false reporting practices will be impossible to identify in most cases and their effect on all data will not likely be predictable.

Given this large number and variety of potential biases, we consider it unlikely that the net effect of direction and magnitude of all possible biases combined can be measured. Such data would be essentially useless.

Identification of the variables responsible for the degree of accuracy in the estimation of the minimum number of grizzly bear family groups for a given area

from observational data will illustrate the impossibility to arrive at a predictable level of accuracy. Variables involved include:

- a) proportion of family group sightings recorded accurately, and;
- b) proportion of family group sightings recorded sincerely.

It will be practically impossible to determine the proportion of sightings unaffected by inaccurate and falsified recording practices. Consequently, ascertainment of the proportion of grizzly bear sightings constituting actually occurring family groups and the degree to which subsequent re-locations were based on correct identification will not be possible. Thus, qualified statements on the number of individual family groups of grizzly bears in the area cannot be made.

Two of the study topics cannot adequately be addressed by observations of unmarked bears, let alone by a system involving the number of potential biases present in this program. Rates of production per adult female (objective 2.2c) cannot unambiguously be determined through observations from animals where free-roaming barren females cannot be identified from all free-roaming single bears with any degree of precision. Similarly, unacceptable biases are inherent to determining the sex of free-roaming grizzly bears (objective 2.2b) when single grizzly bears cannot usually be sexed from observations under field conditions (and this class of single bears is the very one of which knowledge of sex-specific behavioural differences would facilitate male-specific hunting tactics).

5.3 Program feasibility

It has been shown that data of a predictable quality cannot be obtained. Additionally, the reluctance of some (and possibly many) outfitters to cooperate with the program, coupled with the high turnover amongst outfitters* (Pearson 1975; pers. observ.) makes it unlikely that even a few representative RGA's will produce long-term (say, at least ten years) yearly grizzly bear sighting records (drastic declines cannot be expected to be ascertainable in the short term through a sighting system owing to variability in activity patterns of bears, as well as those of participating observers, nor is it likely for such declines to occur under the harvest regime currently in effect).

Thus it is not possible for the program to be used effectively as a means to acquire the data necessary to address the topics mentioned under 2.2.

In view of the risks of financial setbacks that outfitters are exposing themselves to by providing the YFWB with observations of grizzly bears, it seems unrealistic to expect that the vested-interest-generated biases of the data will be insignificant. Although the allegations by outfitters concerning information disclosure may be unfounded, data collected from the public cannot be guaranteed confidentiality. Both existing "Freedom of Information" - legislation and turnover of YFWB staff working with the data may become responsible for disclosure of the information collected.

*Since 1965, six of Yukon Territory's 22 RGA's have changed tenure (or were terminated as RGA's) once, nine changed tenure twice, three changed tenure three times, while four did not change tenure during this period.

2

We conclude that attempts to use observational data of grizzly bears by outfitters and hunting guides to address the stated objectives are ~~not only~~ ^{and} futile ~~but~~ that expecting cooperation from a user group that may suffer from information disclosure is unreasonable.

5.4 Options

As it has been shown that the objectives cannot be met through the present program, other methods of approach will have to be found.

The following notes will briefly discuss possible options to meet the above-mentioned objectives. More detailed proposals will appear under separate cover.

- a) To evaluate existing density estimates and population trends.

Existing density estimates of grizzly bear populations or Yukon Territory bear management units should be subjected to a critical review by qualified researchers. Information on grizzly bear population trend may be addressed through:

- 1) Development of a usable index of population density. Existing data of hunter effort/kill statistics may serve as such an index and its feasibility for this purpose should be evaluated.
- 2) Occasional surveys to determine the actual population density in certain areas and to calibrate the index of population density.

- b) Sex-specific differences in grizzly bear behaviour.

Instructions on sex-specific morphological characteristics, diurnal and seasonal activity patterns of grizzly bears as provided to hunting guides in 1985 should be continued. Further investigations into these aspects, including a thorough literature review are advisable. Current grizzly bear studies in the southwestern Yukon Territory (D. Larsen, unpubl.) may be adapted to facilitate such investigations. However, the facilitation of male-specific hunting tactics should not be limited to non-resident hunters. The current harvest point system for RGA's (1985 YFWB wildlife legislation) is a very powerful tool for the promotion of male-specific hunting among non-resident hunters. Thus one could argue that it is more appropriate to provide resident hunters with the incentive to hunt grizzly bears male-specifically, if harvest optimization and ^{reducing}~~regarding~~ competition of a common resource by different user groups is a desired objective. <

- c) Awareness of ^{the} rate of production of off-spring in grizzly bear populations per unit area and per adult female. <

Creation of this awareness can likely be promoted through instruction of known information derived from intensively studied grizzly bear populations, particularly when such information is presented in a species-comparative fashion. Such information on basic population ecology and population dynamics was provided to outfitters at individual meetings this past spring but should be extended to hunting guides and resident hunters. Various medias (i.e. workshops, informative

newsletters) may be appropriate for the promotion of the above-mentioned awareness.

- d) To exchange information on all aspects of grizzly bear behaviour and distribution to upgrade the understanding of the species, particularly by hunting guides.

Information exchange of this kind is not likely to develop to an appreciable degree amongst outfitters and between outfitters and the YFWB, owing to the competitive nature of the industry as well as the alleged practices associated with previous information releases. Workshops and/or informative newsletters may be more effective means to upgrade the understanding of the species and should be aimed at all user groups.

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APPENDIX I

Guide Letters

APPENDIX II

Outfitter Interviews

December 5, 1985 - Meeting with K. Heynen

Klaas said that the members of the Outfitters Association had agreed to not submit sighting records during their recent closed meeting. However, since the outfitters/YFWB meeting of November 15, some members agreed to share the sighting information with Barney Smith in a vocal fashion (no maps). But, said Klaas, do not expect to receive accurate information; and he went on to elaborate about the influxes of hunters in their areas that had allegedly taken place shortly after field studies had been performed, or information volunteered to the YFWB by outfitters. Promising that confidentiality will be maintained is not going to make any difference in view of the past experiences; he said: "We do not believe your confidentiality".

About our objective to research the possibilities to increase male grizzly vulnerability to harvest, he said, this was just meant as "sirup around our mouths", and added that he did not believe that usually males could be distinguished from solitary females under field conditions. He quoted an example where he and/or other outfitters confronted a bear biologist in the Yukon (?) with pictures of known-sex bears and that this person was often wrong in identification of their sex. He suggested that the point system be changed to where only a certain number of females would be allowed after which hunting would have to be stopped.

It seemed that the Branch was not respected very much by most outfitters (Klaas claimed his views represented those of most outfitters), and he quoted some of the factors responsible for this:

- a) Hunting by staff and/or associates in their areas after YFWB studies.
- b) Low grizzly bear quotas between 1979 and 1984; then all of a sudden extremely liberal bag limits in certain areas.
- c) A previous (acting) director had told them that hunting bears would be allowed with the aid of airplanes and bait, then, after the outfitters had booked clients under these relaxed regulations, the legislative changes turned out to be much more strict. This created an embarrassing situation for the outfitters allowed to hunt bears in the reduction areas in front of their clients.

December 8, 1985 - Meeting with R. Dalziel

Robin reported six sightings of grizzly bears (groups), all in the northeastern section of his area. Apparently his guides weren't interested in participating in the sighting program. He suggested that his guides often would keep hunters unaware of bears spotted by them, so that they would not have to hunt and skin them. Naturally such sightings would not be recorded. Robin said he foresaw no problems in providing detailed geographical information of the sightings. He reported no bears from the long trip on horseback from Elsa to his first camp of the season, presumably due to the guides keeping the horse bells operative.

December 9, 1985 - Telephone conversation with P. Jensen

Pete reported four sightings from two of his guides. Unfortunately no locations and few details were recorded in their note book. Pete himself saw two bears in the West Hart River valley. He suggested that the low number of sightings last season was a result of the relatively small number of hunting parties taken out.

December 9, 1985 -Telephone conversation with D. Smarch

Doug reported two sightings from himself. He found it difficult to receive the notebooks from his guides upon termination of the guiding season. He feels that guides have a lot of things on their mind when in the field and that the notebooks are of relatively low priority. Doug promised to try to get a hold of the notebooks of two of his local guides and to arrange a meeting when in Whitehorse. He suggested that one notebook be kept in each camp that is used by all guides in that camp.

December 9, 1985 - Meeting with D. Marino

Don was quite positive about the sighting system. He had been keeping notes for a few years so as to be able to supply this data to the Branch in order to show what he thought was a much larger population of bears in his area than the one the YFWB had based the quota system on. Both him and his wife were anxious to participate with us and inquired about the information we would like to have. They applauded the idea of a standardized booklet with questions on each sighting that only had to be marked off. One of his guides did not bother to keep a booklet, another one was hunting with Don (Don has those sightings), a few guides didn't see any grizzly bears (including myself, C.S.). One guide in particular, Mel Koehler, had been keeping track of sightings quite diligently and had seen quite a few bears (he had already noted 36 sightings when I (C.S.) left Bonnet Plume Lake, September 17, pers. observ.). Unfortunately, Don couldn't find Koehler's booklet. He supplied his (and his assistant guide's) eleven sightings and felt not uncomfortable with providing map locations. Don usually sees more than one single bear per hunt (two fourteen-day hunts in the early part of the season, followed by some ten-day hunts). He felt he could afford to pass up a bear early in the hunt and wait for a bigger/better trophy.

December 11, 1985 - Telephone interview with R. Hardie

I inquired about the sightings, asking him whether he had received the notebook from the guides. He was somewhat evasive at first suggesting that the books hadn't been received in time for the fall hunting season. But soon he got to the point and stated flatly he wasn't going to provide us with detailed information ("...and no outfitter within 100 miles of Whitehorse will"). He mentioned a few sore points: a) had the Branch made up its mind about whether the bear control program would be continued into 1986? b) Barney Smith was thought to be anti-outfitter, and c) he didn't want to have the Branch tell him where the bears in his area are and how to hunt them ("I know where they are and I feel I am doing O.K. with the proportion of females in the kill; you always are going to get some females in the kill"). He said they saw 14 bears in the spring and 40 in the fall.

December 16, 1985 - Telephone conversation with J. Ostashek

I asked John if he had received the sighting books from his guides and if he wanted to cooperate with the program. John said he didn't mind providing us with the data (after I had told him what kind of information we were interested in). But he was busy for a few weeks and suggested I'd call him back in the New Year.

December 16, 1985 - Telephone discussion with T. Wilkinson

I mentioned to him that I had received negative reports from some outfitters and had found reluctance amongst others. He said he was aware of those feelings and that he would bring it up in the spring meeting to see what could be done about it. But he pointed out the potential problems that could arise from such information becoming known to people that might use it to plan their

hunting trips. "A grizzly bear has a value of five to six thousand (U.S.) dollars to us, and resident kills will be deducted from our quota. So we have a lot to loose". He wasn't as worried as some other outfitters due to the remote location of his RGA and due to the fact that his RGA was not generally perceived as a good sheep hunting area. He inquired about our information storage system and I told him that locations would be stored in the computer by their UTM coordinates.

December 16, 1985 - Telephone conversation with D. Young

I asked Dave whether he wanted to cooperate with the sighting program and what his opinion was about the program. Dave expressed the same concern communicated by K. Heynen and R. Hardie that increased information release might result in an increase of hunting pressure. Apparently he had experienced strong evidence for such a pattern. Although he did not comment on the other outfitters' feelings about the program since the Outfitters/Branch meeting in November, he stated that all outfitters had agreed to hand in the sighting books blank. He did not believe that the Branch could guarantee confidentiality.

January 3, 1986 - Interview with C. Martin

Clay provided 22 grizzly bear sightings from his 1985 fall season. He was not hesitant in supplying detailed information of the locations of the sightings. His feelings about the program were positive in that he saw a need for reporting sightings. He feared that unless the outfitters cooperated with the program, the YFWB would come in and intensively study the populations in their RGA's (along with all the flying involved that he thought to be detrimental to his operation).